

REMARKS

Upon entry of the amendments in this paper, claims 2 and 6-10 will be pending in the above identified application. Claim 6 is herein amended. Claims 9 and 10 are herein added. No new matter is entered. It is respectfully submitted that this paper is fully responsive to the Office action mailed on January 5, 2011.

On the Merits

Claim Rejections - 35 U.S.C. §102 (b)

Claims 2 and 6-8 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 2,908,152 to *Anderson*.

Independent Claim 6:

Independent claim 6 recites:

A ball spline comprising:

a spline shaft having a substantially circular sectional configuration, and having in the outer peripheral surface thereof a plurality of lines of longitudinally extending arcuate torque transmission grooves arranged at equal intervals, with the ball rolling faces being formed on side surfaces of land parts situated in between the torque transmission grooves, such that the ball rolling faces are on both sides in the width direction of each torque transmission groove; and

a spline nut formed substantially as a cylinder with a hollow hole into which the spline shaft is fitted, having on an inner peripheral surface of the hollow hole a plurality of lines of load rolling faces which are adjacent in the circumferential direction opposed to the ball rolling faces of the spline shaft;

a large number of balls rolling while receiving a load in the load region formed whereby the ball rolling faces of the spline shaft and the load rolling faces of the spline nut are opposed to each other; and

the distance between a pair of rows of balls rolling on the ball rolling faces situated on both sides of each of the land parts is set larger than the distance between a pair of rows of balls rolling on the ball rolling faces on both sides of each of the torque transmission grooves,

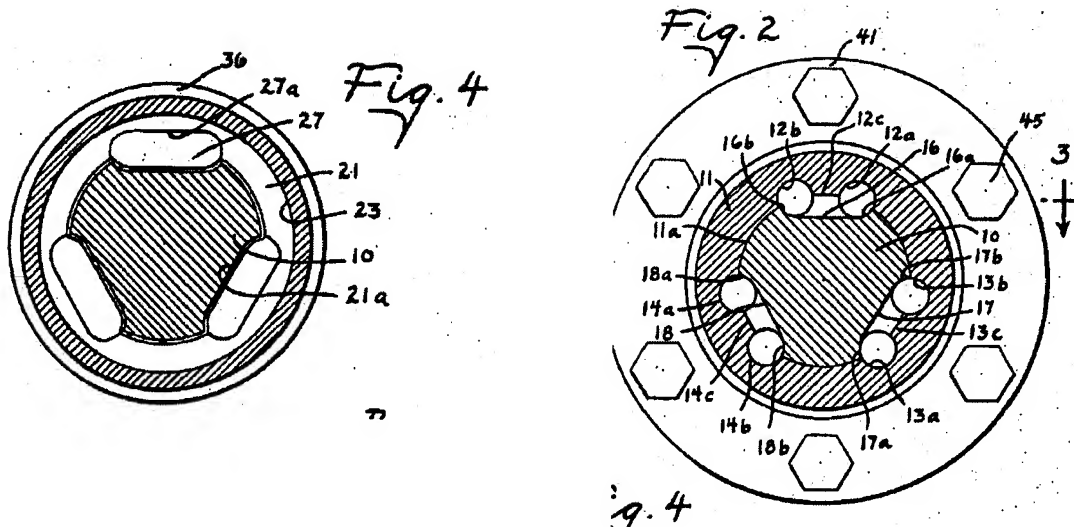
the spline nut has first ball retaining portions, formed of synthetic resin, which are protruded from the inner peripheral surface of the spline nut,

each of the first ball retaining portions is accommodated in the torque transmission groove, and is disposed between a pair of rows of balls rolling on the ball rolling faces on both sides of each of the torque transmission grooves.
(Newly amended part shown in underline.)

The examiner contended that each of the features of independent claim 1 was disclosed in the '152 reference. Applicants respectfully submit that the newly added features of independent claim 6 are not disclosed or rendered obvious by the '152 reference.

The examiner contends that a spline shaft is disclosed by shaft member 10, and a spline nut is disclosed by sleeve member 11. The examiner then contends that the balls are disclosed by antifriction elements 31.

As shown in FIGS. 2 and 4 of the '152 reference (shown below for convenience), the newly added features of independent claim 6 are not disclosed or rendered obvious.



As shown above, the '152 reference does not disclose:

the spline nut has first ball retaining portions, formed of synthetic resin, which are protruded from the inner peripheral surface of the spline nut,

each of the first ball retaining portions is accommodated in the torque transmission groove, and is disposed between a pair of rows of balls rolling on the ball rolling faces on both sides of each of the torque transmission grooves.

As such, applicants ask that the examiner withdraw the rejection and allow the application.

Claims 2 and 6-8 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 3,143,867 to *Anderson*.

Similar to that discussed above, the '867 reference does not disclose the features of independent claim 6, specifically the newly added features. For example, please see FIGS. 3 and 4 of the '867 reference, shown below for convenience.

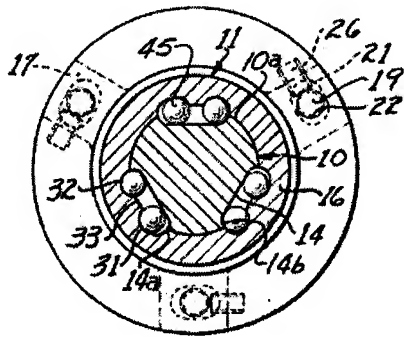


Fig. 3.

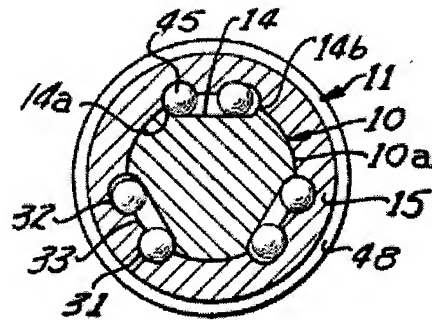


Fig. 4.

As shown above, the '867 reference does not disclose:

the spline nut has first ball retaining portions, formed of synthetic resin, which are protruded from the inner peripheral surface of the spline nut,

each of the first ball retaining portions is accommodated in the torque transmission groove, and is disposed between a pair of rows of balls rolling on the ball rolling faces on both sides of each of the torque transmission grooves.

As such, applicants ask that the examiner withdraw the rejection and allow the application.

Claim Rejections - 35 U.S.C. §103(a)

Claims 2 and 6-8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,127,309 to *Teramachi* in view of JP 06-241228 to *Komata*.

Independent Claim 6:

Applicants respectfully submit that the features of claim 6 are not disclosed or rendered obvious by the cited references.

New Dependent Claim 9:

Newly added Claim 9 recites that the ball retaining portion 25 forms into part of the inner peripheral surface of the spline nut, and the ball retaining portions 24, 25 are disposed on both sides of the load rolling faces of the spline nut.

This feature is not disclosed or rendered obvious by any of the cited references.

New Dependent Claim 10:

Moreover, the newly added Claim 10 recites, as written in the paragraph [0033] and [0037] of the original specification, that the balls are arranged in a row on a coupling belt, and the coupling belt is guided to the ball retaining portion 24 and 25.

This feature is not disclosed or rendered obvious by any of the cited references.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,
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